



**THE DATASHEET OF  
NTE5223A**





ELECTRONICS, INC.  
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## NTE5174A thru NTE5232A Zener Diode, 10 Watt ±5% Tolerance

**Features:**

- Zener Voltage 3.9V to 200V
- Also Available in Reverse Polarity (NTE5174AK thru NTE5232AK)
- DO4 Stud Mount Package

**Absolute Maximum Ratings:**

Forward Voltage ( $I_F = 2A$ ),  $V_F$  ..... 1.5V  
 DC Power Dissipation,  $P_D$  ..... 10W  
     Derate Above 50°C ..... 80mW/°C  
 Operating Junction Temperature Range,  $T_{opr}$  ..... -65° to +175°C  
 Storage Temperature Range,  $T_{stg}$  ..... -65° to +175°C

**Electrical Characteristics:** ( $T_C = +30°C$ , unless otherwise specified)

NTE Type Number (Note 1)	Nominal Zener Voltage $V_z @ I_{zt}$ (Note 2)	Zener Test Current ( $I_{zt}$ )	Maximum Dynamic Impedance (Note 3)		Maximum DC Zener Current* ( $I_{zm}$ ) (Note 4)	Typical Temperature Coefficient $\alpha_{vz}$	Maximum Leakage Current $I_R @ V_R$	
			$Z_{zt} @ I_{zt}$	$Z_{zk} @ 1mA (I_{zk})$			$\mu A$	Volts
			Ohms	Ohms			mA	%/°C
NTE5174A	3.9	640	2.0	400	2380	-.046	100	0.5
NTE5175A	4.3	580	1.5	400	2130	-.033	100	0.5
NTE5176A	4.7	530	1.2	500	1940	-.015	50	1.0
NTE5177A	5.1	490	1.1	550	1780	±.010	10	1.0
NTE5178A	5.6	445	1.0	600	1620	+.030	10	1.0
NTE5179A	6.0	425	1.0	675	1540	+.035	10	1.5
NTE5180A	6.2	405	1.1	750	1460	+.049	10	2.0
NTE5181A	6.8	370	1.2	500	1330	+.040	10	2.0
NTE5182A	7.5	335	1.3	250	1180	.045	100	5.7
NTE5183A	8.2	305	1.5	250	1040	.048	50	6.2

\* Stud Temperature = +75°C

**Electrical Characteristics (Cont'd):** ( $T_C = +30^\circ\text{C}$ , unless otherwise specified)

NTE Type Number (Note 1)	Nominal Zener Voltage $V_z @ I_{zt}$ (Note 2)	Zener Test Current ( $I_{zt}$ )	Maximum Dynamic Impedance (Note 3)		Maximum DC Zener Current* ( $I_{zm}$ ) (Note 4)	Typical Temperature Coefficient $\alpha_{vz}$ %/°C	Maximum Leakage Current $I_R @ V_R$	
			$Z_{zt} @ I_{zt}$	$Z_{zk} @ 1\text{mA} (I_{zk})$			$\mu\text{A}$	Volts
			Ohms	Ohms				
NTE5184A	8.7	290	1.7	250	1000	.049	37	6.6
NTE5185A	9.1	275	2	250	720	.051	25	6.9
NTE5186A	10	250	3	250	860	.055	25	7.6
NTE5187A	11	230	3	250	780	.060	10	8.4
NTE5188A	12	210	3	250	720	.065	10	9.1
NTE5189A	13	190	3	250	660	.065	10	9.9
NTE5190A	14	180	3	250	600	.070	10	10.5
NTE5191A	15	170	3	250	560	.070	10	11.4
NTE5192A	16	155	4	250	530	.070	10	12.2
NTE5193A	17	145	4	250	500	.075	10	13.0
NTE5194A	18	140	4	250	460	.075	10	13.7
NTE5195A	19	130	4	250	440	.075	10	14.0
NTE5196A	20	125	4	250	420	.075	10	15.2
NTE5197A	22	115	5	250	380	.080	10	16.7
NTE5198A	24	105	5	250	350	.080	10	18.2
NTE5199A	25	100	6	250	310	.080	10	18.2
NTE5200A	27	95	7	250	300	.085	10	20.6
NTE5201A	28	90	7.5	275	290	.085	10	21.7
NTE5202A	30	85	8	300	280	.085	10	22.8
NTE5203A	33	75	9	300	260	.085	10	25.1
NTE5204A	36	70	10	300	230	.085	10	27.4
NTE5205A	39	65	11	300	210	.090	10	29.7
NTE5206A	43	60	12	400	195	.090	10	32.7
NTE5207A	45	55	13	400	185	.090	10	33.0
NTE5208A	47	55	14	400	175	.090	10	35.8
NTE5209A	50	50	15	500	165	.090	10	36.0
NTE5210A	51	50	15	500	160	.090	10	38.8
NTE5211A	52	50	15	500	160	.090	10	39.0
NTE5212A	56	45	16	500	150	.090	10	42.6
NTE5213A	60	43	16	550	140	.090	10	44.8
NTE5214A	62	40	17	600	130	.090	10	47.1

\* Stud Temperature =  $+75^\circ\text{C}$

**Electrical Characteristics (Cont'd):** ( $T_C = +30^\circ\text{C}$ , unless otherwise specified)

NTE Type Number (Note 1)	Nominal Zener Voltage $V_z @ I_{zt}$ (Note 2)	Zener Test Current ( $I_{zt}$ )	Maximum Dynamic Impedance (Note 3)		Maximum DC Zener Current* ( $I_{zm}$ ) (Note 4)	Typical Temperature Coefficient $\alpha_{vz}$ %/°C	Maximum Leakage Current $I_R @ V_R$	
			$Z_{zt} @ I_{zt}$	$Z_{zk} @ 1\text{mA } (I_{zk})$			$\mu\text{A}$	Volts
			Ohms	Ohms			mA	
NTE5215A	68	37	18	600	120	.090	10	51.7
NTE5216A	75	33	22	600	110	.090	10	56.0
NTE5217A	82	30	25	700	100	.090	10	62.2
NTE5218A	87	29	30	750	93	.090	10	65.7
NTE5219A	91	28	35	800	85	.090	10	69.2
NTE5220A	100	25	40	900	80	.090	10	76.0
NTE5221A	105	25	45	1000	75	.095	10	76.0
NTE5222A	110	23	55	1100	72	.095	10	83.6
NTE5223A	120	20	75	1200	67	.095	10	91.2
NTE5224A	130	19	100	1300	62	.095	10	98.8
NTE5225A	140	18	125	1400	58	.095	10	100.0
NTE5226A	150	17	175	1500	54	.095	10	114.0
NTE5227A	160	16	200	1600	50	.095	10	121.6
NTE5228A	170	15	225	1675	48	.095	10	128.3
NTE5229A	175	14	250	1750	46	.095	10	135.0
NTE5230A	180	14	260	1850	45	.095	10	136.8
NTE5231A	190	13	280	1925	43	.097	10	144.4
NTE5232A	200	12	300	2000	40	.100	10	152.0

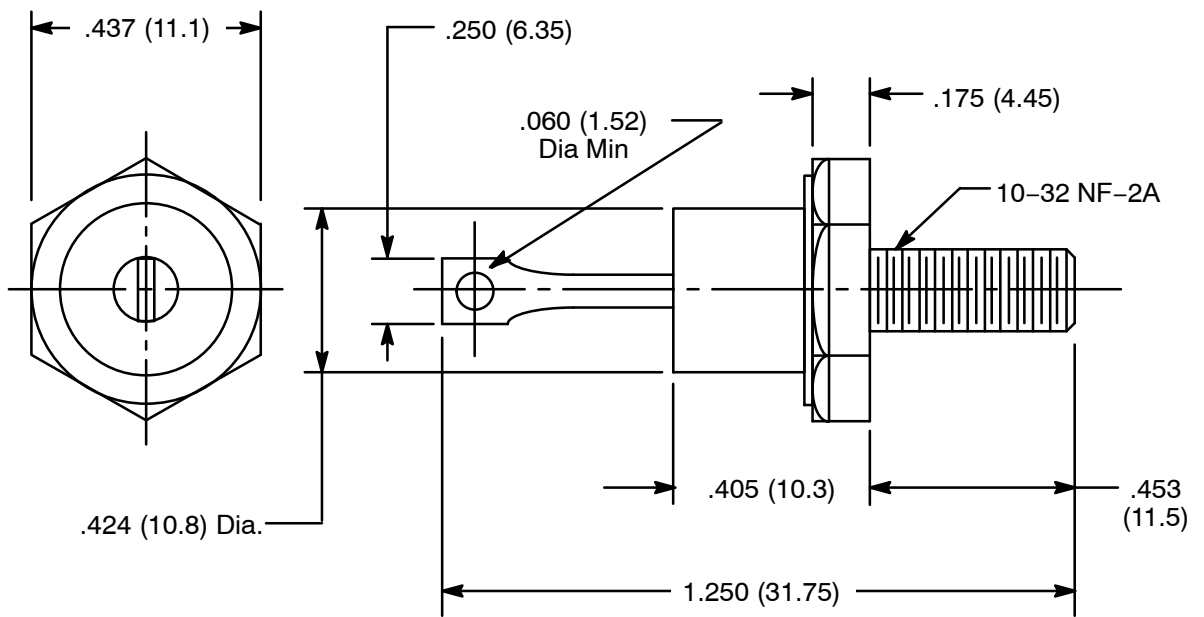
\* Stud Temperature =  $+75^\circ\text{C}$

Note 1. The NTE type 10W Zener Diodes listed have Anode (Standard Polarity) connected to stud. Add suffix letter "K" to the device number for Cathode (Reverse Polarity) connected to stud (i. e. NTE5174AK).

Note 2. The electrical characteristics are measured after allowing the device to stabilize for 90 seconds with  $+30^\circ\text{C}$  base temperature.

Note 3. The zener impedance ( $Z_{zt}$ ) is derived from the 60Hz AC voltage, which results when an AC current having an RMS value equal to 10% of the DC zener current ( $I_{zt}$  or  $I_{zk}$ ) is superimposed on  $I_{zt}$  or  $I_{zk}$ . When making zener impedance measurements at the  $I_{zk}$  test point, it may be necessary to insert a 60Hz band pass filter between the diode and voltmeter to avoid errors resulting from low level noise signals.


Note 4. These values of  $I_{zm}$  may be exceeded in the case of individual diodes. The values shown are calculated for the worst case which is a unit of  $\pm 5\%$  tolerance at the high voltage and of its tolerance range. Allowance has also been made for the rise in zener voltage above  $V_{zt}$ , which results from zener impedance and the increase in junction temperature as power dissipation approaches 10 watts.



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